ARCHITECTVRE

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REGISTRATION BUREAU FOR DRAUGHTSMEN.

HAVING had many inquiries from architects in want of draughtsmen, and from draughtsmen wanting positions, it seems that a Bureau of Registration for draughtsmen would be of value to the profession. We have decided to establish this bureau, or clearing house, free of expense to either party.

All draughtsmen wishing positions may register by answering the following questions:

Name and address?
Married or single?
What experience have you had?
Name and address of last employer?
Salary expected?
References?

All architects wishing draughtsmen are invited to use this bureau.

* * *

THE HOME OF MR. P. A. B. WIDENER.

LENA M. COOPER.

THIS is an age of artistic conceptions and we, like the Greeks of old, revel in beauty and grace of form. Modern architecture has reached its apogee. In the combination of the useful and the beautiful such a nicety of detail exists that we are convinced that Symmetry and Harmony, the twin sisters, presided at its birth.

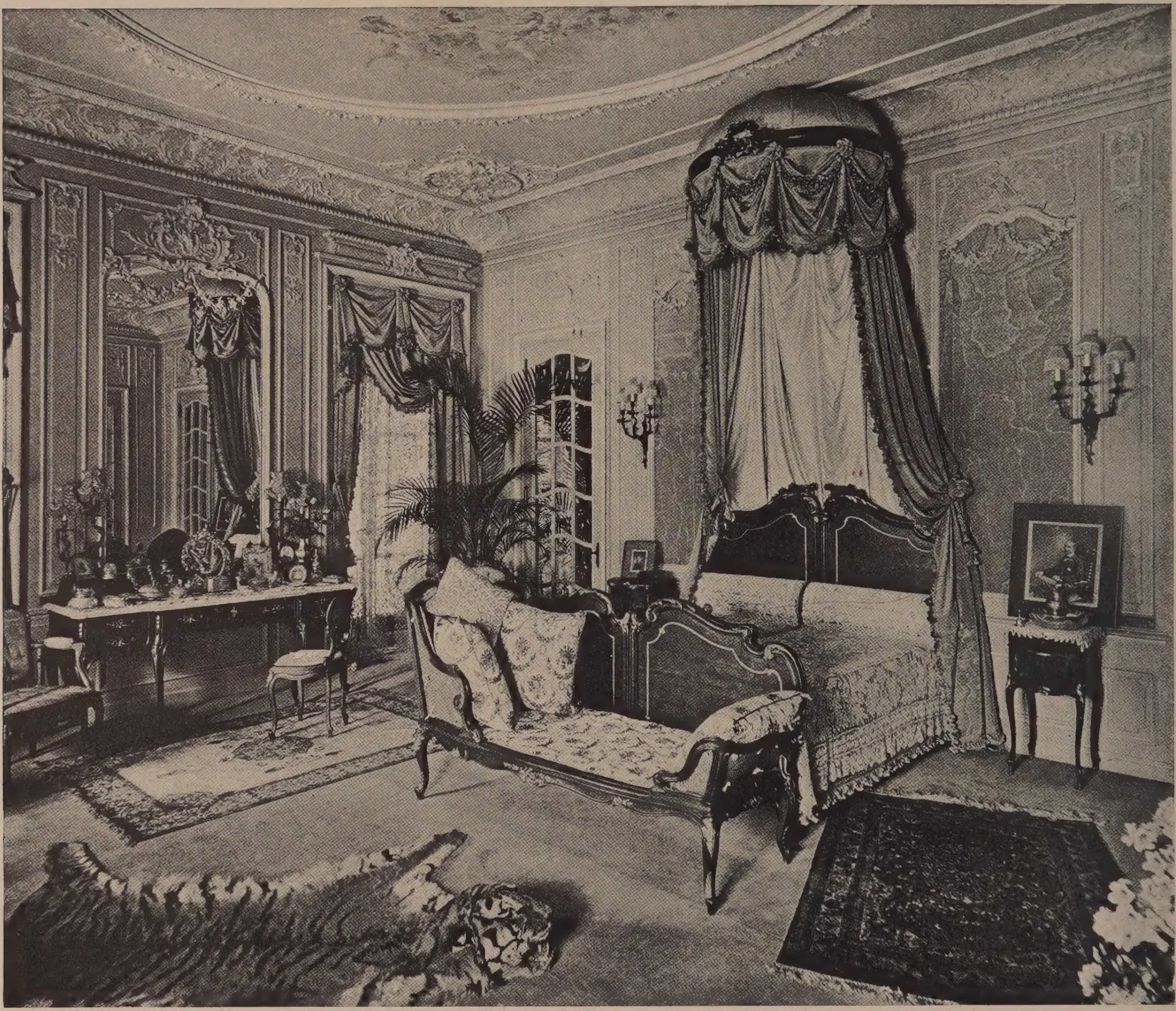
The beautiful home of Mr. P. A. B. Widener at Ogontz, Philadelphia—classic in design—is in its wonderful proportions most effective. Horace Trumbauer of Philadelphia, the architect, has with a happy inspiration used the best points of the Grecian style characteristic of the early Georgian period. "Prior Park," Bath, England, might be mentioned as a prototype.

The extensive grounds are beautifully laid out with the depressed Italian garden, its grottos and statuary and multi-colored shrubs and plants. They are enclosed by a wrought iron fence seven feet high, on a granite base course, the courses and gateways being marked with massive limestone posts. The entrance gate, rich in ornamentation, shows us the best work of the Georgian period. The exterior of the house is of Indiana limestone, the steps, base courses and other similar parts excepted, which are of granite. The outside doors are of Florentine Bronze of Renaissance design. The inner doors are of old gold bronze of the Louis Quatorze period.

The general arrangement of the house is T-shaped, the main entrance hall occupying the center of the plan and measures thirty-six feet square and is two stories high.

The main entrance hall, in tones of red, white and gold, is a good example of the Louis XIV period. The ceiling, arches and pilasters are of Caen stone and in contrast to the deep red and gold of the rich velvet hangings. The mantel to the left, deeply recessed, is of precious marble, over which is a bas-relief by Clodoin. The rugs are in reds and golds to harmonize with the tout-en-semble. This charming creation reflects much credit on Allard & Sons, who are also responsible for the library, breakfast room and bedrooms.

The library, most imposing and stately, is in tones of green with woodwork of light French oak ornamented with gold. The walls are hung with Velours de Genes. The ceiling, a painting of floating angels in clouds, is a genuine Tiepolo from an old Italian palace. The large center table of marquetry and bronze was made expressly for this room. Works of art, paintings by Puvis de Chavannes, Courbet, De Neuville, Fromentin and Baron Leys adorn the walls. The bookcases, nine in number, are of light French oak and gold. The mantel of Vert Cam-



W. A. Cooper, Photo. BEDROOM, RESIDENCE, P. A. B. WIDENER, OGONTZ, PA. Horace Trumbauer. Architect.

pan Melangs forms a rich ornament in a room which sets forth the brilliancy and harmony prevailing in the Louis XIV period.

The reception room is daintily treated in very light tones of Louis XV time. The walls are covered with woodwork of a pale green tint with the panels fitted with Gobelin-like tapestries in the style of Boucher and much to the credit of our own art, are produced in this country by Wm. Baumgarten & Co., as well as the beautiful work in the dining and smoking rooms. The rug covering the floor is a Savonnerie of exquisite design and richness. The gildings are antique. The oval panel of the ceiling is a figure painting on canvass by an old master.

We are impressed with the grandeur of tones and the harmonious treatment of the dining room in the Louis XIV period. It is in French walnut and gilt, with mantel and sideboard of French marble with handsome bronze ornamentations. Over the sideboard hangs an old Gobelin tapestry representing a Caledonian Boar Hunt, and on the wall directly opposite is a similar panel. The hangings are XIV Century red silk velvet Genoese with old gold embroideries. The table and chairs are of French walnut with gilt ornamentations, the latter covered with rich crimson velvet.

The breakfast room, much smaller and less elegant, has more of the homelike feeling. The coloring of plain Gobelin blue with tapestry borders, is restful and pleasing. The mantel of Lanquedoc marble and other furnishings, take us back to the days of Louis XIII.

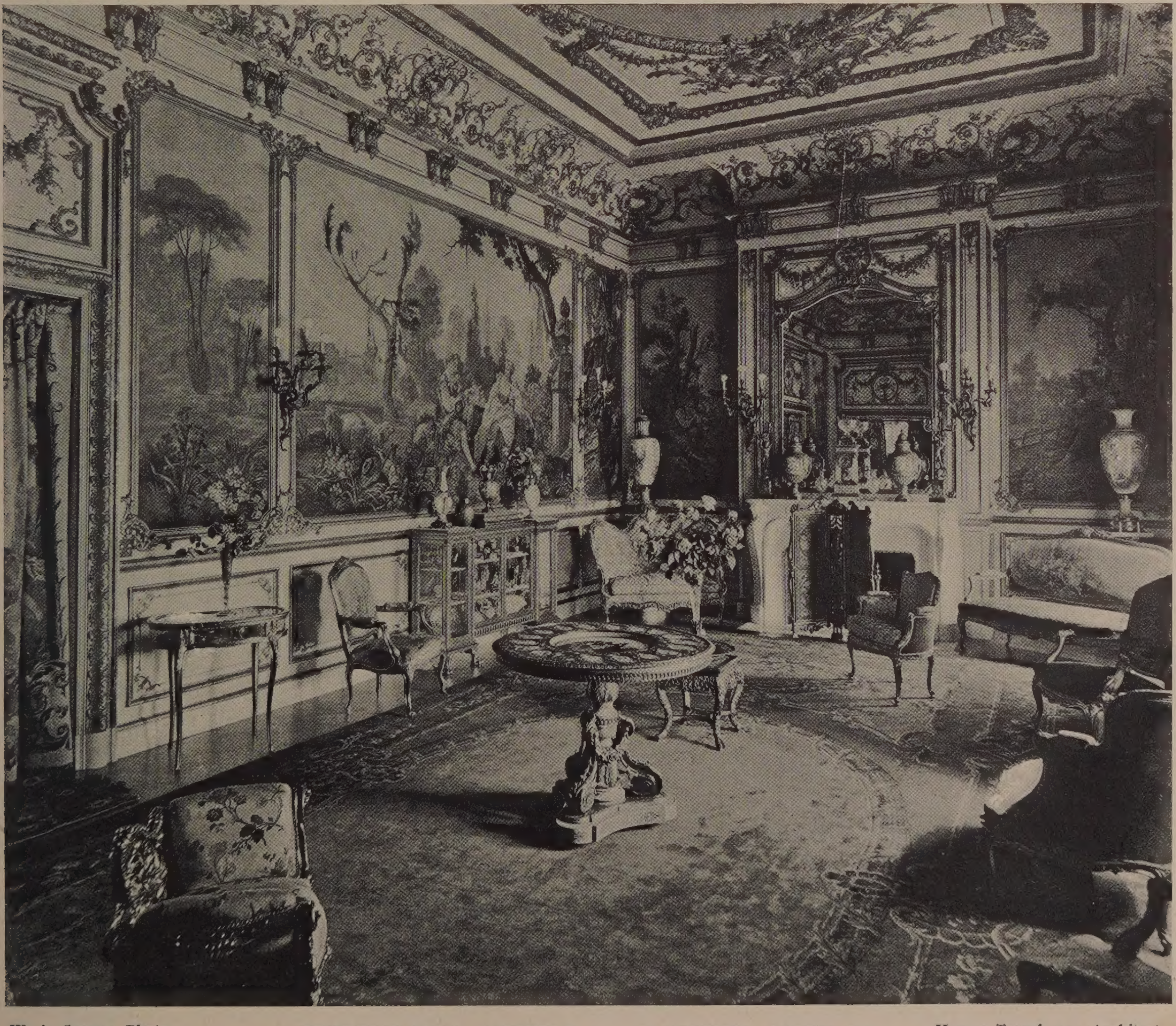
The smoking or sitting room in Flemish oak with walls covered with Spanish (Cordova) antique leather, has a mantel of old Florentine design. The whole effect is taken from the choir of Dordrecht Cathedral.

The magnificent gallery, filled with one of the largest and finest collections of paintings in this country, could not be given deserving or extensive notice here.

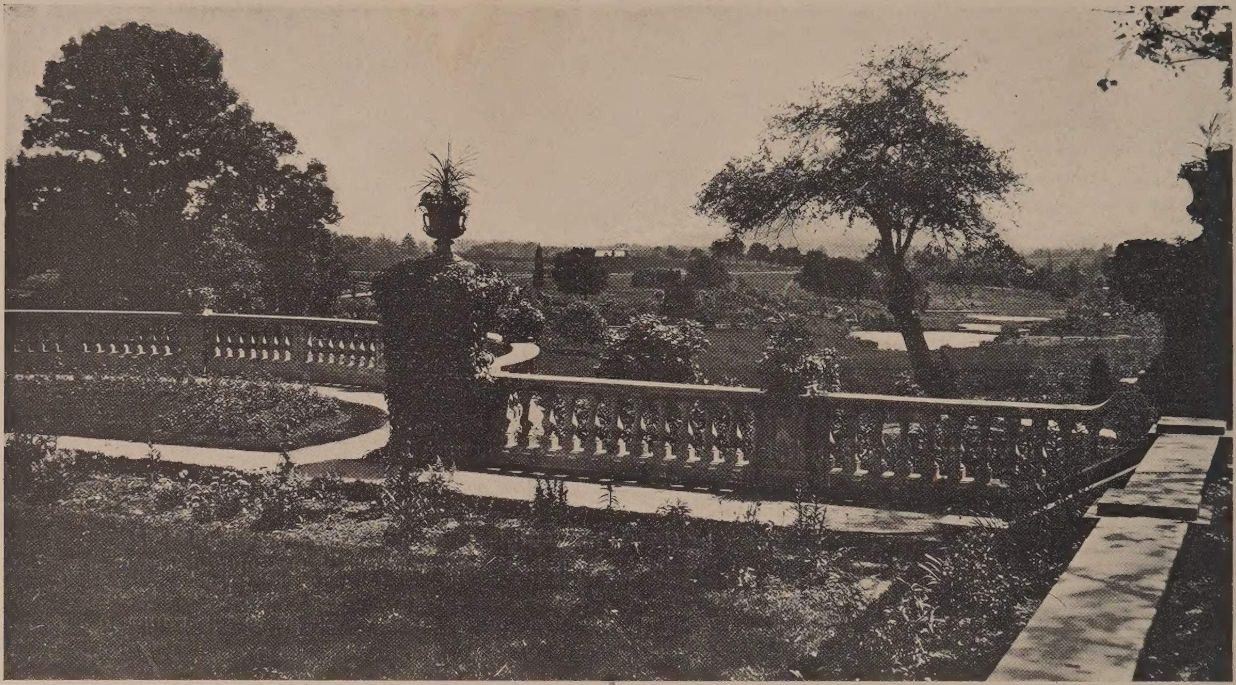
The bed rooms and boudoirs of Mrs. George Widener and Mrs. Joseph Widener are daintily appointed with soft and delicate draperies in tones of French blue and pink after the Louis XV style.

Much could be said of what art and science have accomplished in this home. In its completeness we are filled with admiration and a realization of the capabilities of our time.

IN HIS recent article in *The Nineteenth Century*, that able critic, Mr. Frederick Harrison, gives his "Impressions of America," and it is interesting to note that in considering our architectural development he believes that "America is making violent efforts to evolve a National Architecture." Mr. Harrison then proceeds to say that as yet "we have produced little but miscellaneous imitations of Europeon types and some wonderful constructive devices." He finds much to admire in numerous individual examples of these same types, although taking a number of our best designers severely to task for their too-exact copies of the masterpieces of the old world; which, in his opinion, causes "Broadway and Fifth Avenue to be an architectural potpourri which almost rivals the Rue des Nations at the Paris Exposition of 1900." Mr. Harrison praises our constructive novelties but, as usual, condemns the very types of high buildings which have made these novelties possible. This criticism of our architecture would have been much more interesting had the author pointed out more fully the particular buildings which have convinced him that we are striving for a national style. At present the influence of the Ecole des Beaux Arts is predominant with us and one must design a facade of the French type to be in the prevailing fashion. But as yet there is not the slightest evidence that this fashion will evolve into anything like a "national" style. For the past twenty years we have had fashions in architecture, changing with the seasons, just as we have had fashions in dress, so that an observant pedestrian, walking through the streets of any of our cities, may date the structures with almost absolute correctness. We have had our Romanesque periods, followed without transition by the Italian Rennaissance which has in turn been displaced by the French influences of to-day. Like all converts we have been zealots, and the Romanesque, even when handled by such a master as Richardson, was more Byzantine than its prototypes, while our French motifs of to-day are the motifs of the schools rather than of practice, and are more French than France. When the American architect has had to face new problems where he could not turn to the old world for a precedent he has been original and in a sense national. Nothing like the American coun-



W. A. Cooper, Photo. RECEPTION ROOM, RESIDENCE, P. A. B. WIDENER, OGONTZ, PA. Horace Trumbauer, Architect.



CORNER IN FORMAL GARDEN, SHOWING ARTIFICIAL LAKES IN THE DISTANCE, M. TAYLOR PYNE, PRINCETON, N. J.
D. W. Langton, Landscape Architect.

try house of wood or the American sky-scraper can be found abroad. In the first instance the material has been employed in an honest and effective manner, and many houses of this type show a strong originality as well as perfect adaptation to our national life. To-day this sort of country architecture is being pushed aside to make way for Italian villas and English manor houses, and without questioning their aesthetic value, this tendency distinctly shows a retrograde movement from the one development which promised something "national." Our development toward a national style has, up to date, been purely theoretical. Architects have considered themselves too much bound by precedent. And even any mixture of the authentic styles has in most cases been condemned by the profession, even when the individual critic felt that the combination was harmonious. American architecture has been wonderfully progressive, but, with few exceptions, purely along the lines of the historic styles.

◆ ◆ ◆

WE CONGRATULATE the Architectural League of New York upon the election of Mr. Charles M. Shean as secretary. Mr. Shean is a man with ideas and an amount of assertiveness which will tend to further the progressive policy which characterizes this body. The League's influence is enormous, and the members owe it to the profession to so vigorously assert themselves upon all questions affecting public art and architecture that the people and the city authorities should look upon their advice as "the last word." The League has the prestige and the power to make itself felt. This power and prestige should be used, discretely but vigorously.

HERE is one great city improvement—almost ripe—which, by a little telling work by such an organization as the Architectural League of New York, might soon be brought to a successful conclusion. Everyone who has the slightest interest in New York City realizes the necessity for public baths in the poorer districts. An act is now on the statute books, passed in 1895, making it mandatory on the City to erect "as many public baths as the Health Board may deem necessary." Under this act the Commissioner of Public Buildings, Lighting and Supplies must take the initiative. Commissioner Kearney has taken the necessary action, and basing his figures upon an estimate made by the Health Board, applied last November to the Board of Estimate and Apportionment for $300,000 for public baths. Nearly all the members of the Board including Mayor Van Wyck expressed themselves at this time as in favor of the appropriation. As is usual in such cases the resolution was referred to Comptroller Coler—and there it remains—presumeably pigeon-holed. New York City has been particularly derelict in its duty in this particular, and a little vigorous action on the part of such bodies as the League would wake up the Comptroller to a proper realization of his duties.

◆ ◆ ◆

THREE office buildings, aggregating a cost of over one and one-half million dollars, are in course of erection on Fourth avenue, Pittsburgh, within a distance of 100 yards of each other. In the same square one has just been completed and opened, and only two blocks removed the steel frame of the gigantic Frick building is beginning to appear above the surrounding buildings. The change that is so rapidly being effected in the appearance of this section of the city can be readily imagined. We note with regret the Frick building, which, the public were informed, would be set back fifteen feet from the lot line on three sides so that its twenty stories might not entirely obstruct the view of Richardson's Court House, is being built right up to the line on all sides but one, the Fifth Avenue front, where it sets back about five feet. While the idea of an office building on this site has been roundly denounced in other cities, notably by Mr. C. R. Ashbee, in Chicago, it has met with no serious opposition in Pittsburgh, where the people are glad to see this evidence of material prosperity rearing its twenty stories above the street, even at so great a sacrifice as the obstruction of the view of the Court House, the city's greatest architectural monument.

* * *

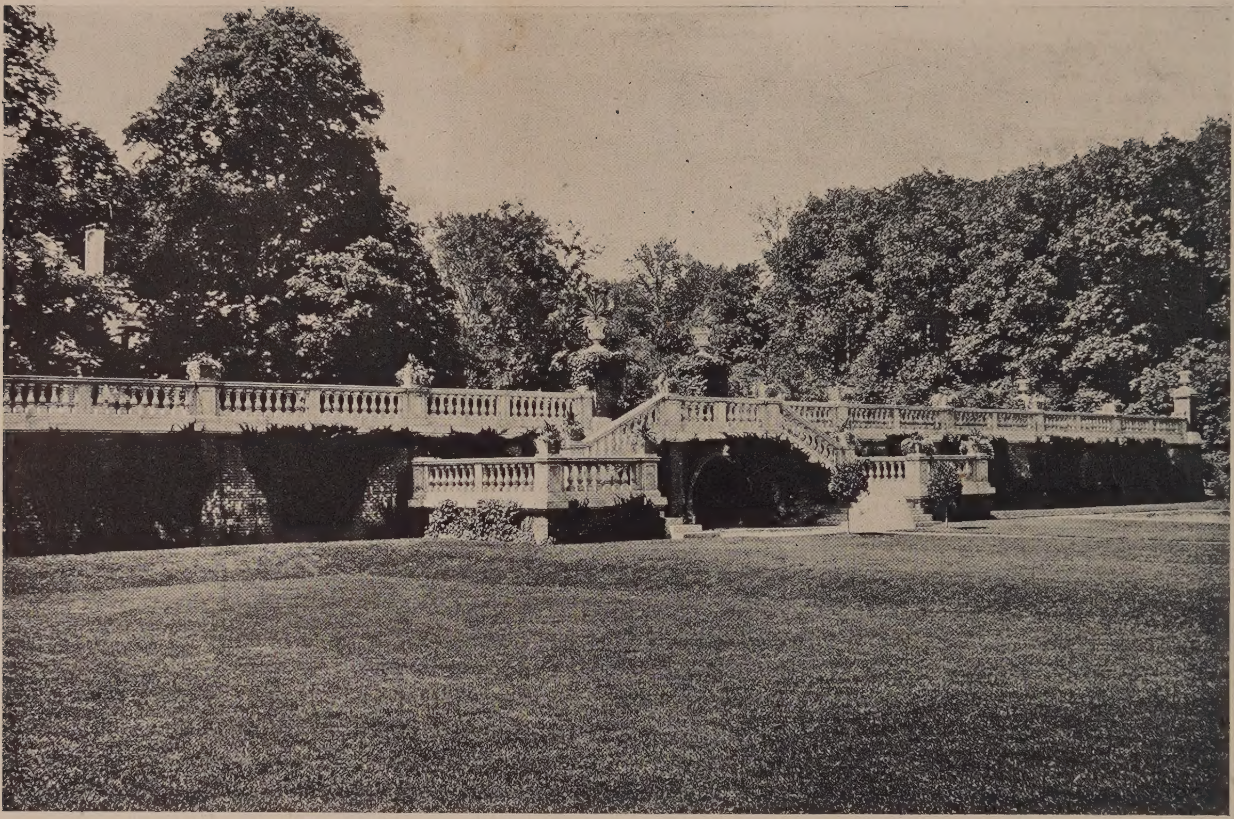
MR. CARNEGIE'S magnificent gift to New York furnishes an opportunity for the Architectural League to make itself felt, as it is of the utmost public importance that the sixty-odd libraries which are to be built should be ornaments to the city in the broadest sense. To this end it would not be out of place for the League to offer its advice to the Trustees of the Public Library, and for the Executive Committee to tender its services in any advisory capacity in which the committee might be useful.

AT THE annual meeting of the Pittsburg Architectural Club the following officers were elected: President, Benj. R. Stevens; Vice-President, George Schwan; Secretary, Walter Trimble; Treasurer, Dan Crone.

* * *

AS EVIDENCE of the cordial relations that exist, not too generally, between architects and their draughtsmen, we are led to cite the following instances of recent occurrence in Pittsburg. In the office of Alden & Harlow two baseball teams, the "married men" and the "single men," were organized and proceeded to a suburban town where the "married men" were made to acknowledge that in athletics, if not in the office, the "single men" were their superiors. Besides taking part in the game the architects entertained the boys at dinner. The firm of Rutan & Russell recently provided for their men a Saturday excursion to Sewickley, a wealthy suburb of Pittsburg, where carriages were in waiting to take the party to the various country houses for which the town is noted, and afterwards to the homes of the firm where dinner and refreshments were served. Aside from providing pleasant and profitable diversions from the routine of office work, such outings have a distinct value in promoting that bond of sympathy between the architect and his assistants without which proper co-operation cannot exist.

FORMAL GARDEN, M. TAYLOR PYNE, PRINCETON, N. J. D. W. Langton, Landscape Architect.



TERRACE FRONT, FORMAL GARDEN, M. TAYLOR PYNE, PRINCETON, N. J. D. W. Langton, Landscape Architect.

IT IS stated on competent authority that Mr. Wallace C. Sabine, Assistant Professor of Physics at Harvard, has a theory of acoustics which reduces this confusing subject to an exact science. Professor Sabine made exhaustive studies for the construction of Symphony Hall in Boston, recently erected by McKim, Mead and White, and prior to the construction of the building laid his plans and data before the architects. The results, it is stated, more than justify Professor Sabine's conclusions, and it is to be hoped that he will shortly give the results of his experiments to the profession in a concise pamphlet which can be used as a text book in the average architectural library.

* * *

A GREAT deal of dissatisfaction is being felt generally by the building interests in New York, on account of the delay on the part of the authorities in amending the Building Code so as to meet the requirements of the Tenement House Act. At present these two statutes are conflicting in the extreme, and an architect is frequently at a loss in attempting to give advice to a prospective client without an exhaustive study and careful comparison of the two. The architects should demand that the Municipal Assembly take immediate action on this matter, so vitally affecting their interests, and should also demand that some recognition be accorded to the small bachelor apartment house which, in the present jumbled condition of the laws, is neither "fish, flesh, nor good red-herring."

THE opponents of the licensing of architects, both in England and in America have always taken it for granted that the public supervision and approval of the architects' qualifications could not under any circumstances extend further than an examination as to his constructive knowledge. Most of the advocates of the measure have scouted the idea that individual liberty to offend the public eye by ludicrously bad taste could be prevented. It has always been assumed by these gentlemen that no legislative enactment could prevent a man using his own property in any way he saw fit, provided that such use was not a menace to life or limb. And yet in England, the very home of this theory, we hear of the formation of a "Society for Checking the Abuses of Out-door Advertising." We note this with satisfaction and with the hope that America may follow England's example—and it is but a slight step forward to the formation of a "Society for Checking the Infliction of Bad Architecture upon the Public"—and so on until we admit that the public have the right to know that an "architect" is competent to design a building which at least will not be offensive.

* * *

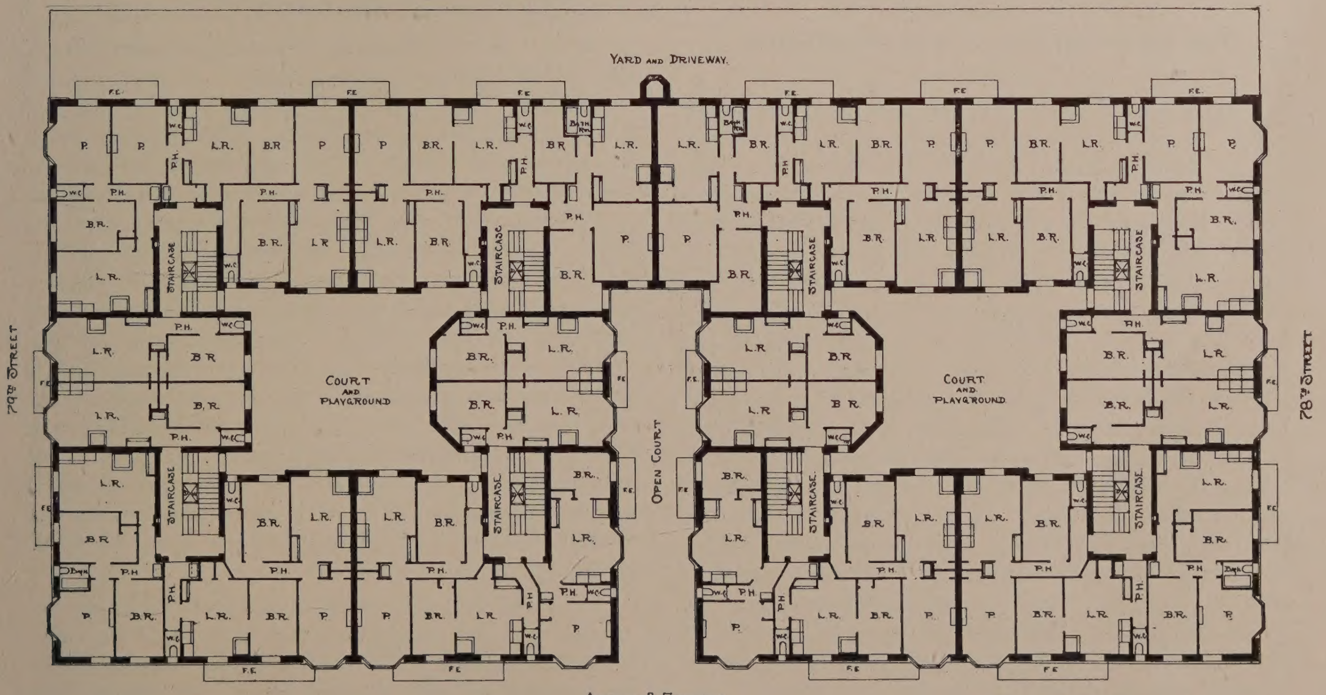
MESSRS. Harde and Short, the architects who were awarded the first prize in the competition for model tenements, held last year under the auspices of the New York Charity Organization Society, have received a more substantial reward than generally falls to the lot of the winner in such contests. One of the promises made in the programme of this competition was that the Society would endeavor to find capitalists to erect model tenements from the winning designs. Happily for both the architects and the city this promise has been realized and Messrs. Harde and Short are about to erect the most important improvement in this line as yet attempted in New York, on Avenue A, extending from 78th to 79th Street. The City and Suburban Homes Company is the owner. If all of the promises made in competitive programmes were realized in this manner, the members of the architectural profession would not fight shy of competitions to the extent that they now do.

* *

As a proof of the versatility of Messrs. Harde and Short, it is a significant fact that they are erecting "The Turretts," 84th street and Riverside Drive, which will be, when completed, the finest apartment building in New York, the apartments renting at an average of ten thousand dollars each. Happy is the architect who can be master of his whole profession.

* * *

PROFESSIONAL careers are not often strewn with honors, or even devoid of obstacles in their pursuit, and of all professions that of architecture is painfully exposed to the misunderstanding and ignorance of the public. The architect is not recognized as other professional men are. While the law and medicine confer on members of their professions certain honors when they are the accompaniment of certain offices, there is no position in the architectural profession the attainment of which will entitle its possessor to recognition in high places. The lack of recognition of the claims of an architect of important buildings is notorious. His thoughts and labor are regarded in some way as merely adventitious or mechanical, and on a different footing altogether to that of a lawyer or medical man. We have over and over again remarked the silence of the press when describing public buildings with regard to the architect—how his name is passed over and ignored by the reporter of opening and memorial functions, while the names of builders, decorators, sculptors, and even tradesmen engaged in the work, are mentioned. It is because the title of architect may be assumed by one's hair-dresser or coal agent, or anyone who presumes to enter the profession, and that therefore his profession cannot be respected. There is the ignorance of the public mind as to what constitutes an architect;—there is a kind of vague idea that he keeps a stock of designs for buildings of all kinds, and he has only to select a design for any given building; that his connection with the building is more that of an agent who looks after the builder. Any skill in design or arrangement is attributed to the builder. While the credit of a picture or a piece of sculpture or decoration would at once be given to the artist who actually composed and executed the work, the design of the architect, however good, is thought to be something of a different order, in which everything falls into its place almost mechanically, without any thought or labor. The fact seems to be, the official position of the architect has much obscured his art function as a designer. He has his office perhaps miles away from the actual building operations, and he is often out of touch with the builder and workmen employed; his work is done largely by deputies who are constantly seen in connection with the operations. Invention in design and planning, communicated by means of drawings on paper, specifications and instructions, are not yet understood by the average employer as involving special study and the thought of many years.



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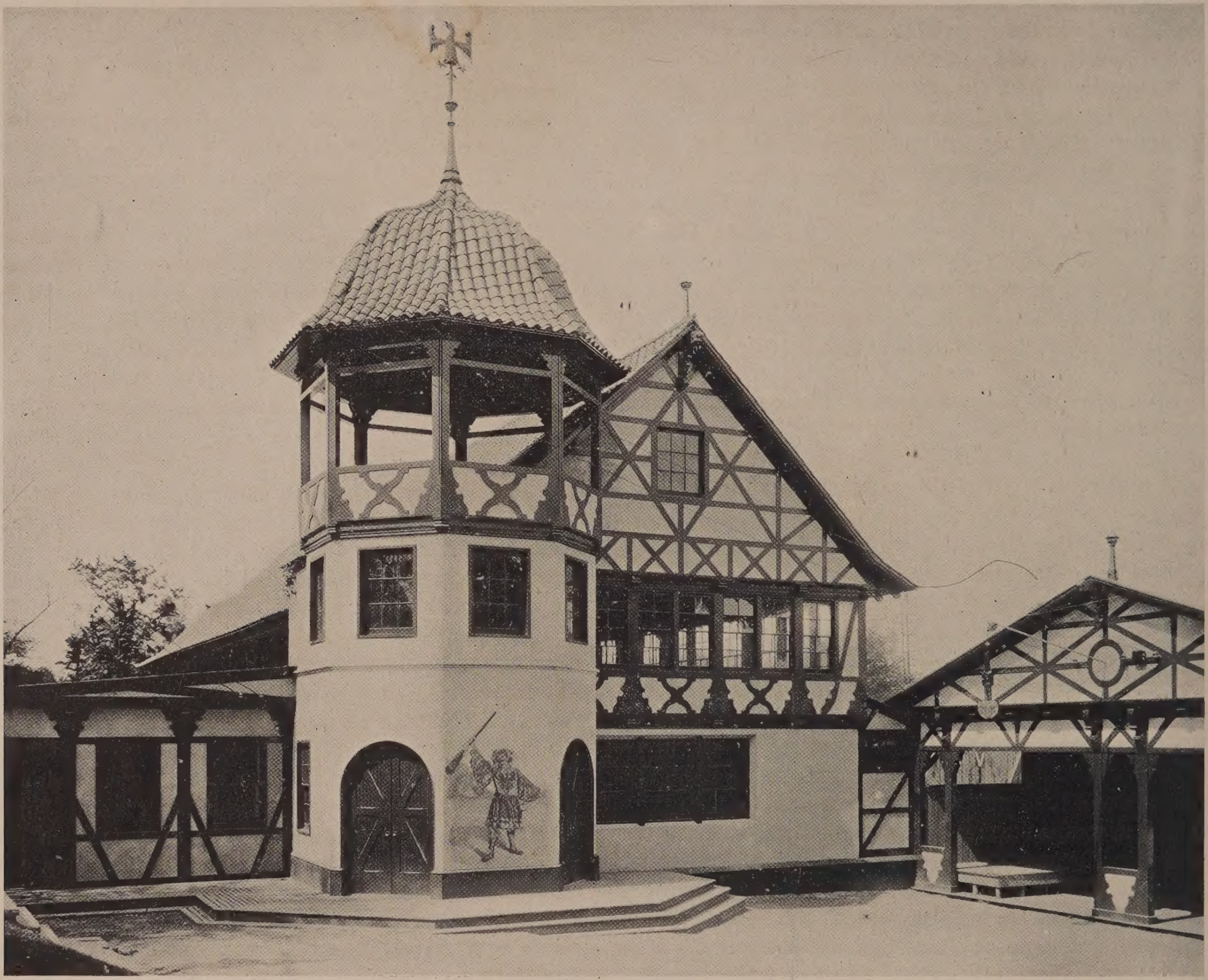


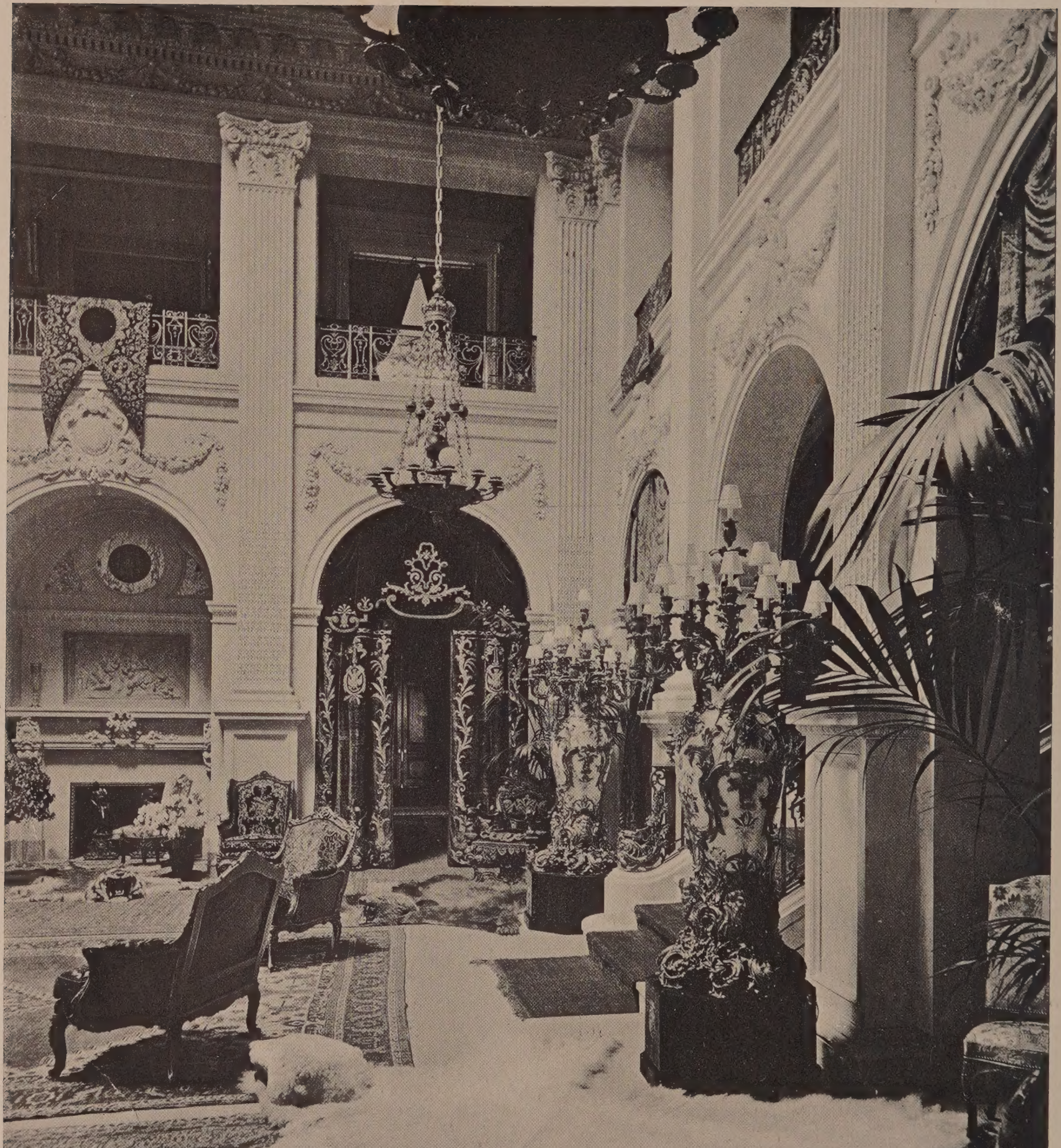
SHOOTING PAVILION, PLATTDUTCHES VOLKSFEST VEREEN, HOBOKEN, N. J. Jos. Wolf, Architect.

THE RECOGNITION OF THE PROFESSION.

H. S. WHITE.

THE art and vocation of architecture has long been neglected and unrecognized as one of the professions entitled to rank as "learned." The general idea is that it is a mechanical art, and therefore cannot be placed on the same level as the professions of law and medicine. But the time has come when we may ask for a revision of this view. Even the term "mechanical" has a wider and more liberal meaning than it once had. Mechanics, as a science, forms one of the fundamental and most important branches of physics: its laws are strictly mathematical. Nevertheless, all arts that were thought to be mechanical were at one time regarded with a sort of contempt. Even Walker, in his dictionary, defines the words "mechanic" and "mechanical" thus: "Mean, servile, of mean occupation; constructed by the laws of mechanics; skilled in mechanics"; and mechanic, as a "low workman." Now we take it that such a misleading definition has had a disparaging effect upon all engaged in works of building, and such a meaning has clung to the art of building and all engaged in it, and has subjected the professors of the art of architecture to similar opprobrium. It is needless to say that this degraded view of the art has entirely passed away. The very name "mechanics" has undergone a change in interpretation; it signifies nothing low or cunning, as was once thought, but a branch of science of vast application and importance, treating of forces. One writer calls it the "geometry of motion." We cannot, therefore, understand the words "low" or "mean" as being applied to such a study, nor can we call "mean" the work of artificers connected with building. What would our modern engineers and artisans think? But architecture has not all to do with mechanics; its laws are important to the architect in his construction; they are only means to an end, and that end is the production of something that shall gratify the senses and express the emotions. Not only mechanics, but a vast array of other sciences, come within the domain of art. Wherefore, then, does the old contention exist, that architecture is not worthy to be placed with other professions?

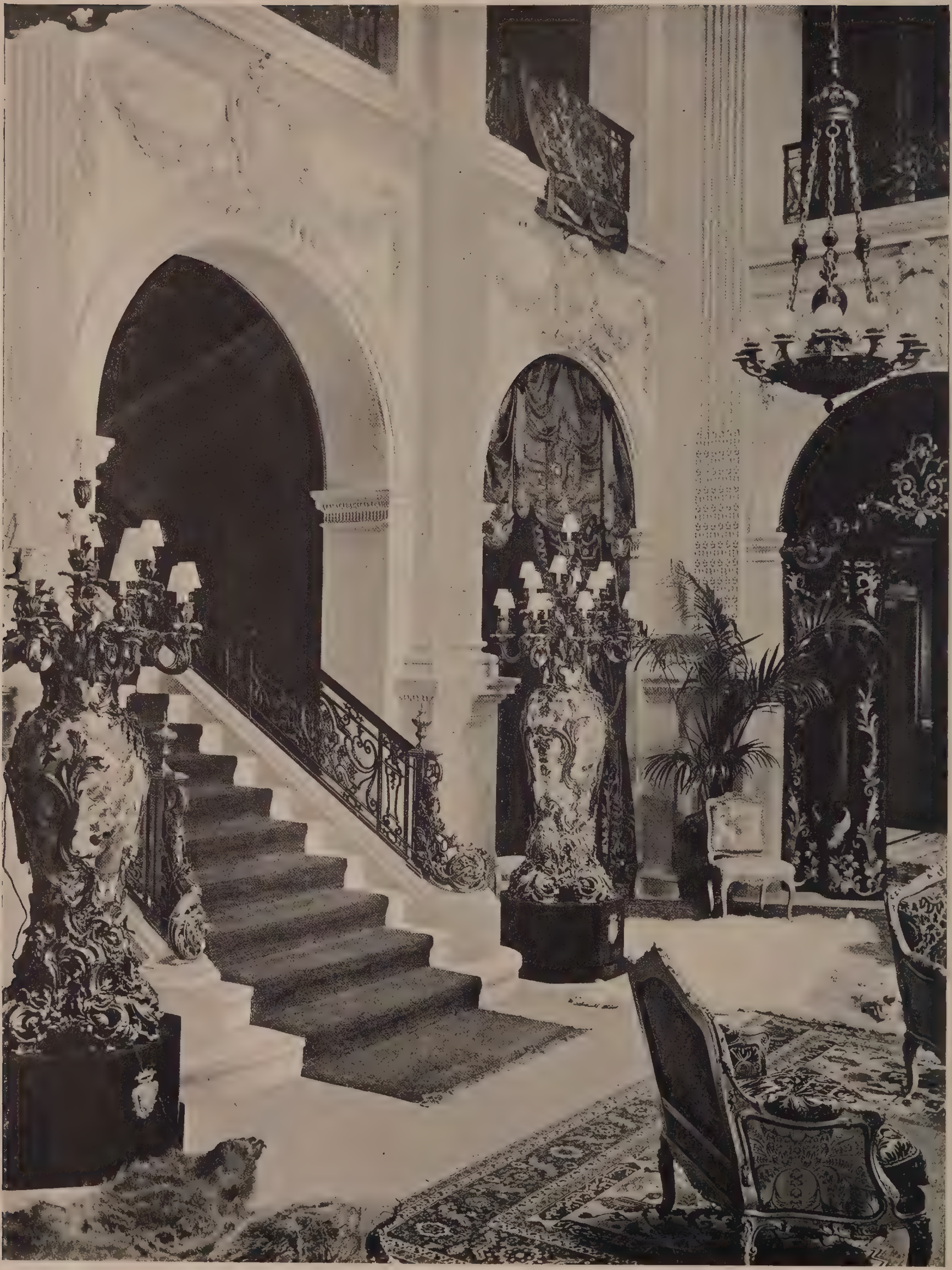
The architectural profession has suffered by its exclusion from the distinction and honor paid to more favored avocations. The painter and the dramatic artist are accorded an easy entrance to the best society; but the architect can only obtain this position through the



W. A. Cooper, Photo.

Horace Trumbauer, Architect.

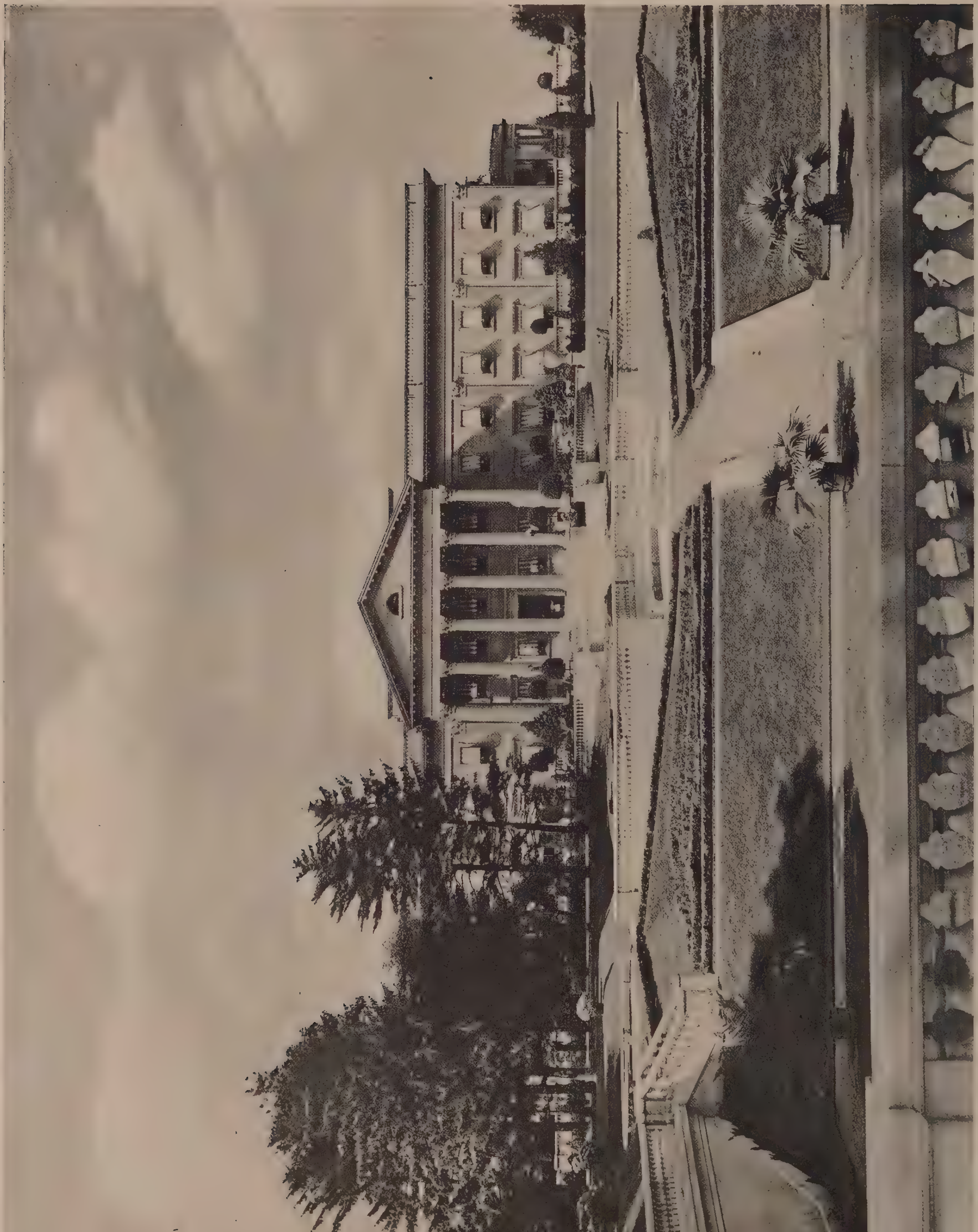
Main Hall, Residence, P. A. B. Widener, Ogontz, Pa.



W. A. Cooper, Photo.

Horace Trumbauer, Architect.

MAIN HALL AND STAIRCASE, RESIDENCE, P. A. B. WIDENER, OGONTZ, PA.



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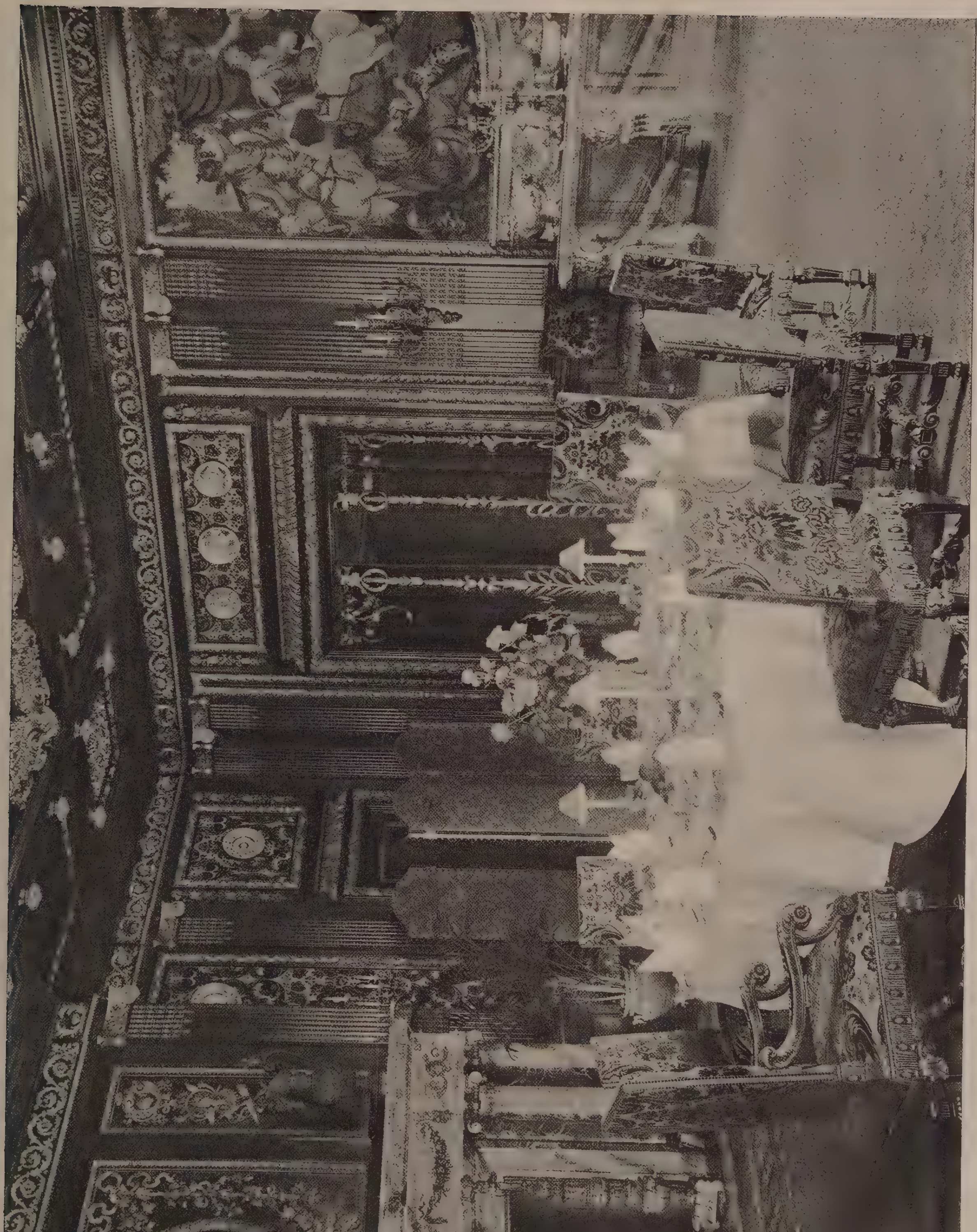
RESIDENCE, P. A. B. WIDENER, OGONTZ, PA.



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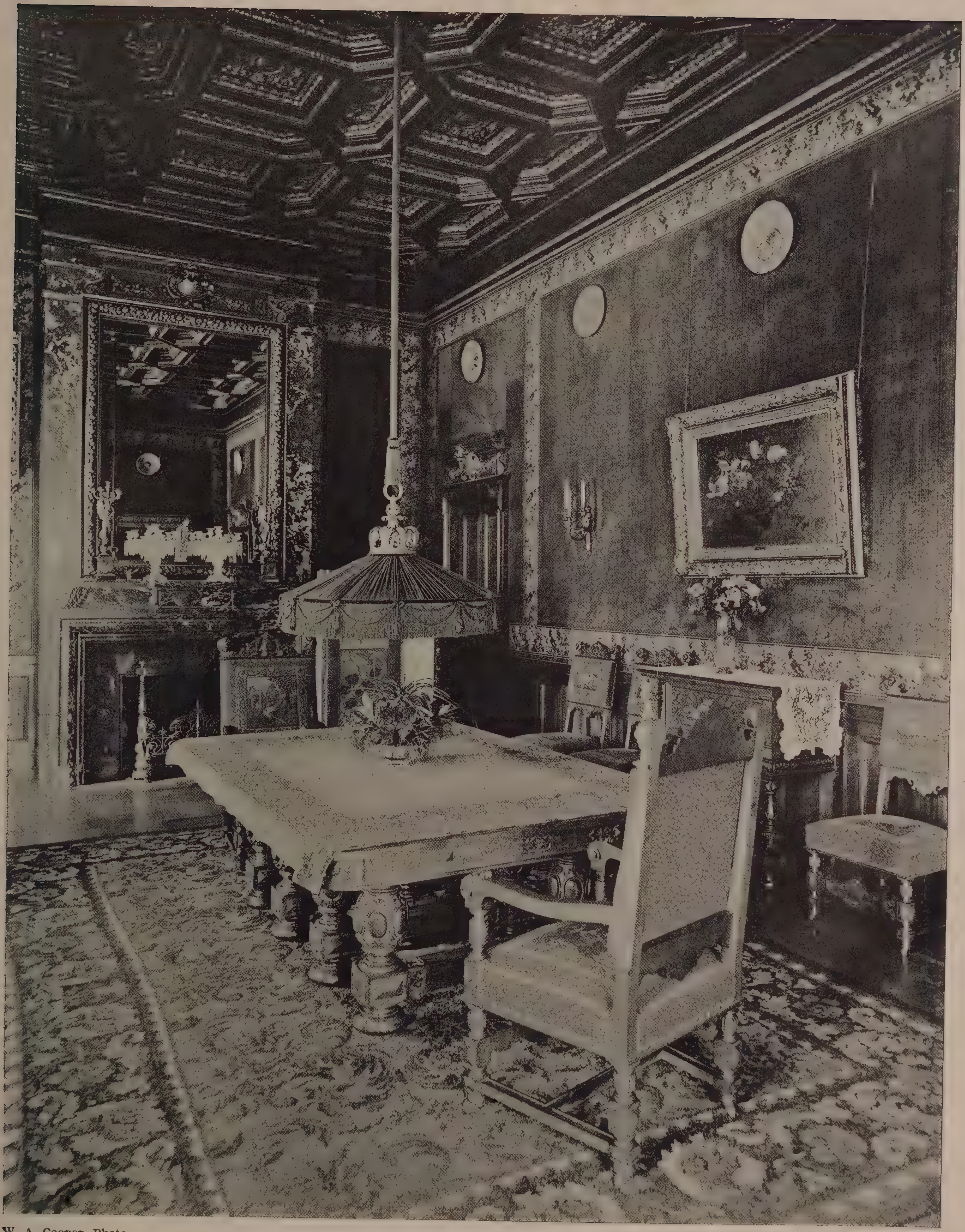
Horace Trumbauer, Architect.

DINING ROOM, RESIDENCE, P. A. B. WIDENER, OGONTZ, PA.



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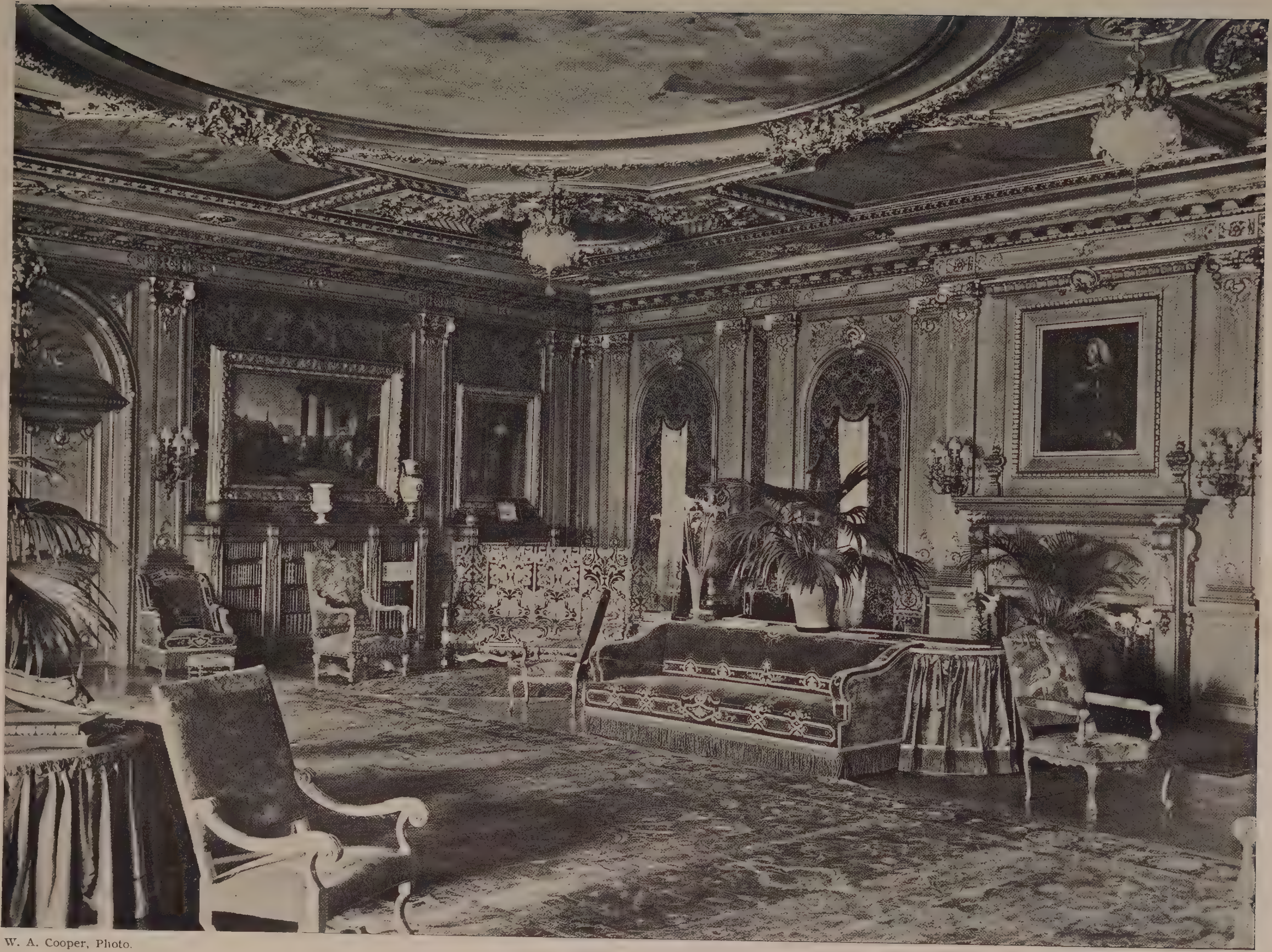
BREAKFAST ROOM, RESIDENCE, P. A. B. WIDENER, OGONTZ, PA.



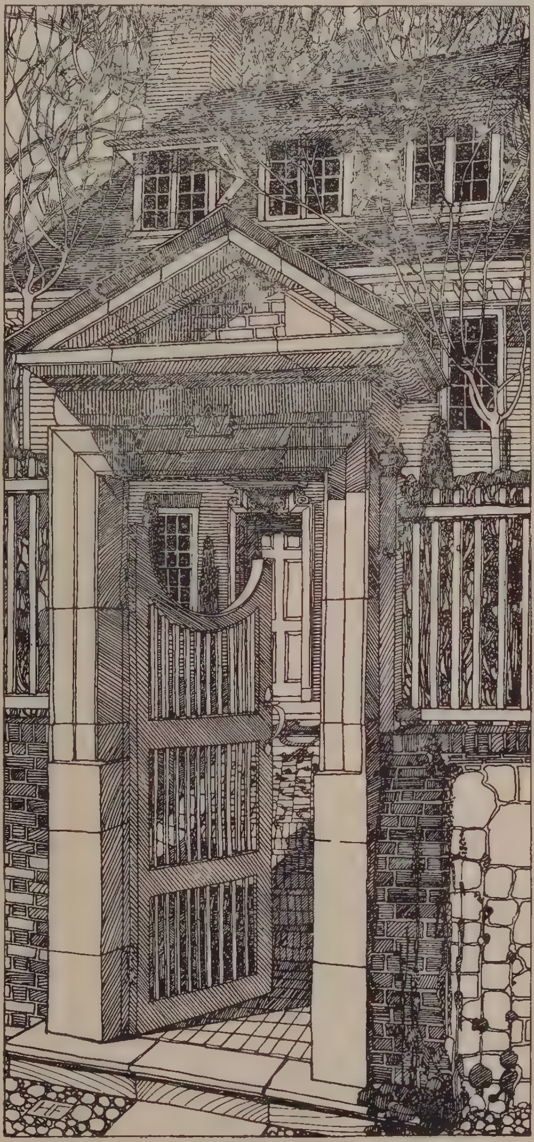
W. A. Cooper, Photo.

Horace Trumbauer, Architect.

LIBRARY, RESIDENCE, P. A. B. WIDENER, OGONTZ, PA.

accidents of good birth or a professional achievement of some note, because simply his work is associated in the minds of most people with trades of the bricklayer, carpenter, or plumber. Still, the old "mechanic" idea lingers; clients still blame the architect if the drains are not perfect, or the floor-boards shrink, quite ignoring the art, position, and function of the architect. His artistic culture, general scientific education, and judicial functions, do not count, because he is regarded as a sort of superior workman. Between art and building he falls to the ground. The artist on the one side and the engineer on the other have taken from him a good deal of his former strength, and he can only make up for this loss by attaining a high place in his own particular sphere. He must have a general, and, at the same time, accurate acquaintance with the many kindred subjects of his profession.

The present means of study at his disposal are rather dislocated. Unless he has had the advantage of a good scholastic education, the first notions of the profession are received when he is a pupil. His ideas are then incoherent and vague. Drawings of certain buildings are thrust before him for tracing or copy before he knows anything about their conditions or requirements; they are like a new alphabet to him. He has learned nothing at school that will prepare him for the work; all he has learnt of mathematics or mechanics or chemistry appears to have no connection with building. Bricks and timber, buildings in progress, and carpenters' shops are before him in abundance; but there is no link between them and what he has previously learned. He learns what he can pick up. By the time he has left office he has gained a few coherent ideas about building as a practice, but little in theory. Then comes the period of architectural classes and technical instruction, but they are somewhat bewildering. The pupil comes to them unprepared, he finds he must work up his neglected mathematics, his knowledge of physics, and as to the historical and theoretical part of his subject he knows very little.



DESIGN FOR GATEWAY. Harold Falkner, Architect.

The other lectures and classes on materials, levelling, professional practice, hygiene, &c., are extremely valuable to the student who is prepared to enter into them with some previous acquaintance of the subjects, but rather confusing to those who have not yet digested other branches, and whose minds are not in a condition to take up other subjects. By presenting to the student such opposite subjects as Mediæval and Renaissance, and then formulæ and stresses, drainage and water supply and quantities, or use of color and professional practice, all in the course of a few days, he is bewildered, because his faculties naturally take to one or other of these studies, and an interval of rest is necessary to the mind before a quite different theme is taken up. Many students like to take their mental pabulum slowly, and succession of totally different subjects forced upon their attention before they have had time to grasp one properly, can be of no real advantage. The "cram" system has failed chiefly on this ground. But all the education in the world will not implant the artistic power, and this is one reason why an academical and scientific education has not given the artist the position it confers on the other professions, which rely chiefly on their scholastic and scientific acquirements of their knowledge of law. The artist is the exception. Yet if the patrons of the architect know that he has the training and knowledge which the highest schools can impart, the present unsatisfactory condition of the profession as a social factor cannot long remain, and the architect will be regarded with a respect equal to that shown to the professors of law and medicine.

* * *

THE profession of architecture demands a free hand. Any restraint is undesirable in the pursuit of art. The sculptor and painter could never achieve any success in their arts if hampered in the exercise, and of all artists the architect suffers the most from restrictions of various kinds; at one time in the choice of site, in another of material, in a third of the kind of design he is permitted to use, on another occasion in restriction as to cost, &c., or curtailed authority in the discharge of his functions. Then he often suffers from the restraints imposed by statutory

OLD HOUSE IN EAST BUDLEIGH, ENGLAND.

legislation, rights of light, interference or adjoining owners. It would take us too far to attempt to illustrate these several kinds of restraint, and their effect upon design and building. But they are all essentially practical, and have practical consequences. These restrictions place the architect in a less fortunate position than his brother artists, and condition his work in a manner that is apt to injure the design. Hence it is we are too apt to misjudge the result. The original design comes out badly. We sometimes blame the architect for this disappointment; but in many of these cases we ought to take into account the impediments in his way—how he had to alter this or trim that to make the building conformable with absolute requirements. It is this that makes the architect's work so difficult to estimate at its true value. Then there are other hindrances of a semi-official and instrumental kind, a troublesome contractor or owner, vexatious interference of the employer, from which the artist who executes his own work is altogether exempt. Then we have the various questions that arise during the course of building which the architect has to decide and determine—questions of variation, of addition, of extras and omissions, and their cost. These are matters which repeatedly provoke reprisals from the contractor, who asserts they are not specified; or that he cannot execute them; and, on the other hand, often stir the ire of the employer, who refuses to pay for them. They are certainly very troublesome, and are best avoided, if possible; but they repeatedly occur, and the architect must be prepared to stand or fall by them.

ACOUSTICAL PROPERTIES OF BUILDINGS.

THEORY, however true, and based on scientific deductions, has not always been applied with success. There has been some neglected factor, or the imperfections of practice have considerably discounted the results. The architect, above all professional men, is aware of the discrepancy in a great deal of his design and constructional work. The most perfect applications of theoretical science have been found wanting, and this fact is forcibly exemplified in the application of acoustical principles to building. Very few architects have been able to apply even the little science we have on the subject to building, simply because the principles of a perfectly acoustic structure, as given by theorists, cannot be practically utilized. For example, the perfect acoustic form sectionally of a room or hall would be trumpet-shaped; but this idea would involve structural modifications of walls and roof or ceiling of a more or less impracticable kind. Many of the designs for concert-halls and theatres have shown the theoretical form of plan and section—namely, a curved or sloped floor and ceiling, but which their authors would have hesitated to have committed themselves to in actual building. More to the point would it be if the architect considered the question of roofing of the proper heights for ceilings and their shape, and the absorbing power of the walls and material and furniture, as upon these depends very largely the audibility of the room. Many architects have fallen into the mistake that if they copied a well-known auditorium of acoustical efficiency, they would secure the same results—not considering that the effect will depend on the materials of which it is built, and the real size. The copy must, be exact, both in materials and scale, or the result will be different. In one rectangular room the acoustical qualities may be perfect, in another of similar proportions and size very much the reverse—all because the materials and absorbing power of the walls are not the same in both. Much disappointment has therefore been experienced in the acoustic effect of auditoriums in which the best plans and latest theories have been followed. The fact is that the copy is larger or smaller, according to the requirements for accommodation, or the construction is different,—fireproof materials may be adopted, the walls are plastered on metal laths, the galleries are of steel and concrete. Each of these changes demanded some compensating alteration in the plan or proportion. These differences have not been suspected by the architect, who thinks that if he followed the plan of a successful building, it will give him the desired result. Again, the acoustical qualities necessary for a theatre or lecture-hall are not required for a concert-room or opera-house, where music is the predominant consideration. One building requires the property of reverberation to be reduced to the lowest value; in the other, resonance and reverberation are often desirable qualities. Both these properties depend on the arrangement and materials.

The practical difficulties, therefore, of carrying out the theoretical principles of acoustics in the plan and construction of buildings have created a distrust in the minds of architects, and have to some extent discredited the science as one of practical realization. The rules that have been formulated, based on proportions and curves founded on the absorbing power of the materials contained, are too complicated for general use. In these remarks we do not propose to discuss the subject mathematically, but only to point to a few of the ascertained facts and principles, for we believe the architect will not readily accept for his guidance rules that are contrary to those forms and proportions he has been accustomed to employ. He may, however, be induced to follow certain general principles in planning and roofing, and to employ materials that will give the best results, and by which he may be able to estimate the reverberation in any auditorium from the plans and specifications.

In our present remarks we will simply refer to a few of the practical deductions that have been made from experiment relating to the forms and p oportions of rooms intended for large residences. We presume the reader is acquainted with the principles of the science, such as he may learn from such useful elementary works, as "The Acoustics of Public Buildings," by Professor Roger Smith, and other treatises. The laws that govern sound and light are to some extent analogous, and the proper illustration of sound propagation being like the undulations on the surface of the water caused by anything dropped, is a good one, and these simple laws of the conduction of sound through the air or other media are easily comprehended. But these analogies must not be carried too far. Waves of

THE OLD MANOR HOUSE AT BOXHILL, ENGLAND.

AN OLD HOUSE IN OXFORD, ENGLAND.

sound are transmitted, broken, reflected or deflected much in the same manner as the waves or ripples on the surface of water. Some bodies reflect sound, others reinforce it by sympathetic vibration; but the differences in the media of transmission must be taken into account. Sound-waves are continually being broken and modified by contrary currents, draughts, different densities of the air and other causes. The architect is mainly concerned to know what are the best forms of building, and the best materials he can employ to prevent absorption. The reflection, deflection, conduction and absorption of sound are the most important of the laws required by him. We may enunciate one general proposition: that the most theoretically perfect form may, from various circumstances, such as absorption, obstacles, &c., be less successful in results than less perfect plans in which these matters have been studied.

One of the questions which primarily has to be considered is the power of the voice, or the dimensions of a building in which a speaker can be heard without difficulty. Writers have generally referred to the natural diffusion of sound in the open air on a calm day. Saunders showed by his experiments that when a person read from a book on a still day on an open plain he could be heard 92 feet in front, 75 feet on each side, and 31 feet behind, and if we draw these boundaries we have a circle flattened behind the speaker. Sir Christopher Wren gives more reasonable distances—viz., 50 feet in front of the speaker, 30 feet on each side, and 20 feet behind, a circumscribed area large enough to seat about 1,000 persons—a more useful standard. With galleries, a hall or church could on this calculation well accommodate about 2,000—the extreme number that can see and hear comfortably in a church. Speaking first of direct radiation of sound, the principle upon which a large class of buildings depend for sound—as theatres, halls—height and shallowness of depth are desirable. A larger quantity of air than absolutely necessary is to be avoided, as the more air there is, the more vocal exertion is required to set it in vibration, to say nothing of disturbing causes like ventilating appliances, which cause a contrary current to be established in the auditorium. M. Lachez and many other experimentalists have established the fact that a large amount of air above and behind a speaker, which his voice has to set in motion, is objectionable; and the same rule applies to the size of the auditorium: hence, an approximate rule for ordinary rooms is, that other things being the same, the room or hall should be low in proportion to the width. By restricting the room at the platform end, making it low and without too much space behind the speaker or vocalist, its length may be increased; and this is practically effected by a lecture-room with a platform or orchestral recess or apse. One writer says, "for lecture and schoolrooms a height of two, a depth of three, and a breadth of four has proved extremely satisfactory, the speaker being on the longest axis. For small churches, court, or other rooms, when the speaker is on the shortest axis, a height of one, width of two, and depth of three has proved good." The same authority says also, "On account of the nodal points established by the columns in nave and aisle churches, a length of four to five, width of two, and height of one to one and three-quarters works well. This is for cubical contents; but on account of the lower ceiling in the aisles, the nave ceiling may be greatly increased in height over the above proportions." The proportion given by the above figures gives a rather low building, but a height of three can be given on account of the low aisles, and this proportion will agree with the proportion of many modern churches of this type. For theatres a height of three, breadth of four and a length of five is said to be satisfactory, and many of the Chicago theatres are of this proportion.

The form of floors and ceilings has a considerable effect on the acoustic properties of a building, though they cannot always be adopted. Mr. Scott Russell, in a paper published in 1839, and also M. Lachez, have both considered the question. The seats are arranged on a concave curve called "isacoustic" or equal-hearing curve, and this plan has been adopted in some lecture halls and churches. According to this curve the seats dip down a little near the platform, and then gradually rise, so that all the lines of sight converge to one point—that of the speaker. The curvature required will vary according to the height of speaker. The position and height of speaker being determined, and that of the first auditor's head, a line is drawn from the lecturer's mouth to the first auditor's head, and at horizontal distances two feet six inches between the backs of seats; and allowing eighteen inches for each successive seat in height, a series of points are fixed which form the curve. The curve is explained in many books on acoustics, and we merely refer to it here. The same object is sometimes attained by making the main floor slope upwards from front to back. In the formation of the ceiling much also can be done to improve the radiation of sound. Where they are flat they should never join the walls at right angles, but have coves or springing curves; and these curved portions of the ceiling should be brought down as low as possible ro nd the platform. The volume of air is thereby reduced, and unpleasant echo avoided. In theatres the ceiling of auditorium should be as nearly as practicable raked from the proscenium arch to a point over the highest gallery sufficient to give head room. This slope may be curved, and the ceiling stepped and coved to prevent reverberation from the rear wall of theatre. Indeed a good acoustical ceiling would follow the proscenium arch for some distance, and not, as generally the case, form a deep break between them.

Speaking of the pillars, aisles, and timber roofs of Gothic churches, so far are these from being worse for hearing in, they are generally better than the widespread buildings, all under one span, like a railway station, which it is the fashion to erect in large towns. Some of the worst places for hearing are buildings all under one roof, and of far less capacity than many churches, both old and new, of the nave-and-aisle construction, in which large congregations can hear perfectly well. The explanation is that in these wide-spanned

"GORDON ARMS," NEAR PETERBOROUGH, ENGLAND.

and lofty roofs there is a large and unnecessary volume of air to set in motion, which the nave-and-aisle construction avoids. The open-timber roof and arcades, if not too lofty, also prevent reverberation and echo in many instances, which the large, smooth surface of a long and wide-span roof often create. The roof that is most favorable for sound is one ceiled or boarded around the braces and collars which cut off the triangular space above, and many of the polygonal-shaped church roofs are of this description. We have here confined ourselves to buildings of ordinary construction with straight or rectangular walls and roofs, and have said nothing of those disturbing obstacles to the construction of sound—like galleries and seats. But the walls also can be so arranged as to facilitate the conveyance of sound. In fact, theoretical considerations would point to an inclosure of a flattened circular or elliptical form. We know indeed that the ancient Greek theatre was a very perfect form for large audiences and sightseers. They heard by direct radiation of the voice. The seats were arranged in slopes on the ampitheatrical plan above one another, and were continued in a horseshoe or semicircular form till they met the wall of the proscenium. But as we have before hinted, buildings with curved walls do not come often within the practical requirements of the architect, and can only be adopted for theatres, ampitheatres, and for concert halls of a large and special class. Our chief purpose is to show that a great deal may be done to render our ordinary halls and concert rooms acoustically satisfactory by the adoption of certain rules and materials in their construction, some of which are within the architect's control.

(*To be concluded.*)

* * *

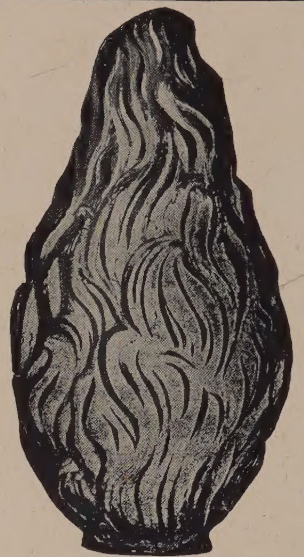
Londoners have one custom which greatly aroused the admiration of a New Yorker who has just come back to this city and who would like to see it introduced here. There the backyards of the houses, or what corresponds to the backyard of a residence here, are rendered attractive, decorated with flowers and made to serve a purpose quite impossible to any New York backyard. There is usually a balcony overlooking the yard, which is ornamented with growing plants until it might be taken for a conservatory. The imagination of decorators is allowed to exercise itself in all sorts of ways in making beautiful this part of the London house.

* * *

REGISTRATION.

To the Editor of Architecture:

Dear Sir:—It seems hardly reasonable to suppose that there can be any real benefit obtained from the institution of the various architectural societies, when voluntary education and voluntary registration are the limits to which they attempt to elevate the profession. If the profession is to be recognized in the manner which its antiquity and standing demand, and its power for good or evil for the public interests warrant then certainly it ought not to be a profession so open, so uneducated, and so easy of entry as the profession



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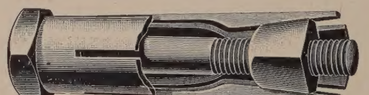

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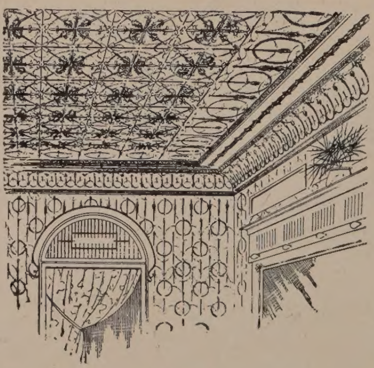

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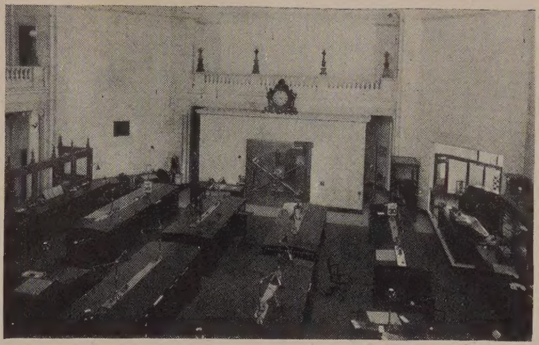

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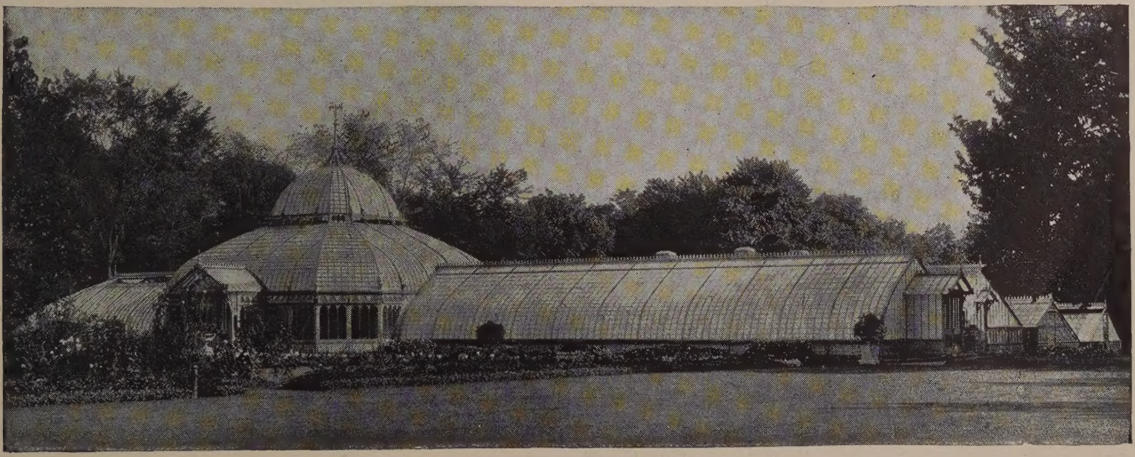

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is to-day. The education of its members cannot in any way deteriorate from their artistic ability, while a thorough knowledge of the profession, and all its necessities in construction and sanitation, cannot but add to the protection of the public, and to the ennobling of the art of architecture, which we profess to practice. The Architectural League of New York has attempted—and if it has not been able to do more it is for lack of support from the Institute and other societies—to press forward the work of compulsory education and registration, which should long ago have been made the chief aim of every architectural society in existence. That we may succeed in awakening the Institute to its obvious duty is the hope of every member of the League, and if we do not succeed in this we must continue the work ourselves. That we have not succeeded sooner is to be accounted for solely by the opposition, active and passive, which is shown by the Institute, and by other societies, influenced more or less by it. The eventual outcome will no doubt be what common sense points out as being absolutely necessary, that is that everyone who proposes or desires to enter the profession will be first compelled to show himself competent to do so. The protection of the title of architect is one apparently of international importance, as we find at the late International Congress at Paris that a resolution was adopted in favor of restricting the practice of architecture to those provided with a proper Government certificate, placed within reach of all, by the diffusion of achitectural education, and so protecting the public by preventing incompetent persons from entering the profession. C. S. W.

* * *

PAINTS IN ARCHITECTURE—A QUESTION THAT CAN BE ANSWERED.

SELF-interest, in one form or another, dominates most human actions, and it is not remarkable, in view of this fact, that everyone who has anything to sell, should proclaim it to be the ''best.'' It is perfectly natural that the manufacturer of paint, for example, should laud his particular product above all competing products; but it is quite as natural that he, on the other hand, whose interests lie in securing the ''best'' should closely scrutinize all *ex parte* claims.

This obvious proposition is here laid down to account for the widespread prejudice that exists among a certain class of artisans against combination paints. The prejudice is partly a traditional inheritance from the time when there was no good paint except pure white lead, and partly it is a carefully fostered result of misinformation.

Whether combinations containing a large proportion of zinc white are superior or inferior to ''straight'' paints or not is easily determinable by specifying the two to be used side by side on the same building, and it is to the interest of architects as well as consumers to have the question settled beyond question. Architects in their more or less complete control of specifications are in a better position than any other class to settle the matter and keep it settled. CHARLES JOURDAIN.

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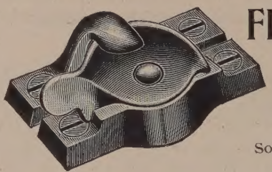
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